

## CLAIMS

1. A controller of a vacuum pump having a pump mechanism section that performs evacuation to set a space to be  
5 evacuated to a predetermined degree of vacuum, and an electric motor section for driving said pump mechanism section,

wherein, when an increase in load torque of said vacuum pump per unit time abruptly changes upward, deceleration control to decrease a rotational speed of said electric motor  
10 section is carried out.

2. The controller according to claim 1, wherein said load torque of said vacuum pump is calculated based on a value of a current supplied to said electric motor section.

3. The controller according to claim 1, wherein said increase in load torque of said vacuum pump per unit time is monitored repeatedly at a predetermined time interval and that monitoring is continued even after it is determined that said  
20 increase in load torque of said vacuum pump per unit time has increased abruptly.

4. The controller according to claim 1, wherein, when said increase in load torque of said vacuum pump per unit time  
25 is greater than a predetermined value, it is determined that said increase in load torque of said vacuum pump per unit time has abruptly changed upward and said deceleration control is carried out.

5. The controller according to claim 1, wherein, when a rate of change in said increase in load torque of said vacuum pump per unit time is greater than a predetermined value, it is determined that said increase in load torque of said vacuum pump per unit time has abruptly changed upward and said  
30 deceleration control is carried out.

6. The controller according to claim 4, wherein said deceleration control is carried out to reduce said increase in load torque of said vacuum pump per unit time to a predetermined target value.

7. The controller according to claim 5, wherein said deceleration control is carried out to reduce a rate of change in said increase in load torque of said vacuum pump per unit time to a predetermined target value.

8. The controller according to claim 1, wherein said electric motor section is controlled in such a way that said load torque of said vacuum pump does not exceed a predetermined upper limit.

9. The controller according to claim 1, wherein said electric motor section is constructed by a synchronous motor type or inductive motor type brushless motor.

10. The controller according to claim 1, wherein a load-lock chamber provided side-by-side with respect to a process chamber in a semiconductor production apparatus is said space to be exhausted by said vacuum pump.

11. The controller according to claim 1, wherein said increase in load torque of said vacuum pump per unit time is monitored repeatedly at a predetermined time interval, and that monitoring is stopped after it is determined that said increase in load torque of said vacuum pump per unit time has abruptly changed upward.

12. The controller according to claim 11, wherein a number of times said deceleration control is repeated is restricted.

13. A control method for a vacuum pump having a pump mechanism section that performs evacuation to set a space to be evacuated to a predetermined degree of vacuum and an electric motor section for driving said pump mechanism section, wherein, when an increase in load torque of said vacuum pump per unit time abruptly changes upward, deceleration control to decrease a rotational speed of said electric motor section is carried out.

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